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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,450	02/05/2002	Mahendra Ladharam Joshi	06204P USA	7386

23543 7590 09/03/2003

AIR PRODUCTS AND CHEMICALS, INC.
PATENT DEPARTMENT
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EXAMINER

CLARKE, SARA SACHIE

ART UNIT	PAPER NUMBER
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3743

DATE MAILED: 09/03/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/067,450

Applicant(s)

JOSHI ET AL.

Examiner

Sara Clarke

Art Unit

3743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,8-12,14,15,18,24-26,28 and 29 is/are rejected.
- 7) ☒ Claim(s) 2-4,7,13,16,17,19-23,27 and 30-32 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

The first line of the specification should be updated to include the serial number and filing date of the parent application to be entitled to the benefit under 35 U.S.C. 120.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the conical and rectangular blocks of claims 16, 17, 30, and 31 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. See 37 CFR 1.85(a).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 11, there is no antecedent basis for "the large scale vortex device."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5, 6, 8-12, 14, 15, 18, and 24-26, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over latrides et al. (US 5743723) in view of Johnson (US 5688115).

latrides et al. discloses an oxygen fuel burner and thus is analogous prior art. latrides et al. discloses the invention substantially as claimed including a fluid based flame stabilizer which can provide a fuel-lean flame at equivalence ratio in the range of $\phi=0.05$ to 0.3. Since latrides et al. discloses the same structure as disclosed by Applicant in his disclosure, latrides et al. necessarily provides a fuel-lean flame at equivalence ratio in the range of $\phi=0.05$ to 0.3.

latrides et al., however, does not disclose a plurality of fuel staging lances, each lance having a staging nozzle and at least one hole.

Johnson discloses a low NO_x staged burner and is thus analogous prior art.

Johnson teaches the use of lances 24 to deliver fuel gas to a forward end of the burner to provide staged combustion and to thereby reduce NO_x. It is noted that the hole 28 of the lances 24 has a radial divergence angle and an axial divergence angle.

Thus, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to provide the burner of Iatrides et al. with an array of lances as taught by Johnson to deliver fuel gas to the forward end of the burner of Iatrides et al. to provide staged combustion to thereby reduce NO_x.

Iatrides et al. and Johnson render obvious, for the reasons set forth above, the structure disclosed in Applicant's specification as providing the function of NO_x emissions being less than 9 ppmv at near stoichiometric conditions. Thus, the function would necessarily flow from the combined teachings of Iatrides et al. and Johnson barring convincing evidence to the contrary.

Regarding claim 8, see claims 10 and 20 of the Johnson reference.

Regarding claims 1, 9, 18, and 24, the "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Regarding claims 11 and 25, Iatrides et al. and Johnson render obvious, for the reasons set forth above, the structure disclosed in Applicant's specification as providing the function of a fuel-lean flame that has a peak flame temperature less than approximately 2000° F. Thus, the function would necessarily flow from the combined teachings of Iatrides et al. and Johnson barring convincing evidence to the contrary.

Regarding claims 14 and 28, Iatrides et al. and Johnson render obvious, for the reasons set forth above, the structure disclosed in Applicant's specification as providing the characteristic of a the fuel rate of the staging for natural gas fuel being from 70% to 95% of the total firing rate of the burner. Thus, the characteristic would necessarily flow from the combined teachings of Iatrides et al. and Johnson barring convincing evidence to the contrary.

Allowable Subject Matter

Claims 2-4, 7, 13, 16, 17, 19-23, 27, and 30-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zink et al. (US 6499990) discloses a single stage burner arrangement. Bury et al. (US 5634785), Schwartz et al. (US 5098282), and Martin et al. (US 4505666) disclose burner arrangements having staged combustion.


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Clarke whose telephone number is (703) 308-1388. The examiner can normally be reached Thurs and Fri, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-

0861.


Sara Clarke
Primary Examiner
Art Unit 3743

September 1, 2003